Village of Laurelville
WWTP Renovation Project
Narrative Statement (Workplan) Updated

Following receipt of the February 2, 2000 letter from Randy Spencer of the Ohio EPA, and with the anticipated additional flow of raw sanitary wastewater from the Village of Adelphi, the Village Council of Laurelville determined renovation of the Laurelville Wastewater Treatment Facility was inevitable. The superintendent of the facility had visited a facility in Illinois, in December 1999 that employed similar processing of wastewater. The facility had recently completed renovations to their facility employing conversion of intermittent sand filters to aerated rock media, and replacement of the Hinde Aeration System with new updated material from the same manufacturer. The effluent study had proven the quality of discharged waters is outstanding.

The council agreed to meet with Mr. John Hinde, of Air Diffusion Systems (ADS) to listen to his proposal for upgrades to the Laurelville facility. In March 2000, Mr. Hinde visited the facility and made recommendations for what he felt would be most beneficial to restore the plant to "like new" condition. This plan included testing sludge depth and composition, removal of subsurface aeration headers and cross tubing, replacement of headers with above-ground headers, replacement of fine bubble tubing, replacement of blowers, replacement of feeder piping with exposed stainless steel piping to allow cooling of 200+ degree air from the blowers, initial and continued treatment for accumulated sludge digestion, replacement of two of the four sand filters with aerated media and feeder lines to introduce nitro-soma bacteria for ammonia reduction, and rehabilitation of the remaining two filters for final polishing.

The superintendent made additional notes of items required to restore the facility and collection system, and presented the most urgent to the council in April 2000. That same month, advertisements for bids were placed, in accordance with current laws, for the removal and disposal of sand from all filters, replacement of sand in filters 2 and 3, lagoon baffles, aerated media placement in filers 1 and 4, lagoon aeration renovation, blower and control replacement, sludge testing and initial treatment, and sludge digestion bacteria feeders.

In May 2000, bids received were awarded and the village borrowed $100,000 at 6.0% from the Salt Creek Valley Bank in Laurelville to proceed with as much of the project as possible.

To cause the least disruption to the system, the first step was the removal of sand, followed by the replacement of sand in two of the filters. The remaining two filters were removed from service pending installation of aerated media. During the same period, sludge depth and composition were analyzed. The mapped data showed the primary lagoons averaged 36" in sludge depth, of which 80% was organic in nature and could be digested using high dosages of bacteria. The secondary lagoons averaged 18" in depth with a similar composition. Each lagoon was transferred into another, while airflow continued in the remaining lagoons. The old submerged header pipes and aeration tubing was removed as each lagoon was dewatered. Using a boat, an application of bacteria was applied to the sludge remaining in each lagoon. The old baffles were removed and disposed of in a landfill.

Village of Laurelville
WWTP Renovation Project
Narrative Statement (Workplan) Updated

Plant employees began the task of driving galvanized fence posts at 3' intervals around the perimeters of the lagoons. The posts hold the new header piping, now exposed for ease of maintenance. ADS, winner of the aeration bid, fused the header pipe and pulled the bubbler tubing. At the same time, the superintendent installed new blower controls, blowers and stainless steel piping to feed air to the lagoons. This phase of the project was completed in December 2000.

As of September 2001, the following work has been completed:

- Preliminary sludge depth testing
- Lagoon dewatering, removal and disposal of existing lagoon baffles and aeration headers, lines and gas cleaning apparatus
- Sand filter media and disposal
- Sand replacement, filters 2 and 3
- Installation of new lagoon aeration
- Installation of new lagoon baffles
- Installation of new blower equipment and electrical updates
- OEPA Permits
- Engineering services
- Administrative services

Non-bid work to date has been performed by plant personnel.

The following work remains and is in priority order:

1. Comminutor rehabilitation
2. Purchase and installation of media filter drain valves and distribution piping
3. Purchase and installation of aerated filter media
4. Purchase and installation of media filter covers
5. Purchase and installation of Bacta-pure equipment
6. Purchase and installation of Nitro-soma fed equipment
7. Purchase and installation of effluent flow meter
8. Purchase and installation of disinfection equipment
9. Purchase and installation of dosing tank pump
10. Purchase and installation of lift station pumps
11. Purchase and installation of lift station guide rail systems
12. Rehabilitation of electrical components
13. Installation of office sewage grinder station
14. Purchase and installation of composite samplers
15. Purchase and installation of emergency generator
16. Purchase of excavation equipment
17. Purchase of sewer inspection camera
18. Fence replacement
19. Purchase of service truck and equipment
20. Addition to existing building or building of new administrative/billing offices

5

Village of Laurelville
WWTP Renovation Project
Narrative Statement (Workplan) Updated

Update to Narrative Statement for the period ending March 31, 2003

A list of items remaining to be completed, shown on the previous page and following:

1. Comminutor rehabilitation
2. Purchase and installation of media filter drain valves and distribution piping
3. Purchase and installation of aerated filter media
4. Purchase and installation of media filter covers
5. Purchase and installation of Bacta-pure equipment
6. Purchase and installation of Nitro-soma fed equipment
7. Purchase and installation of effluent flow meter
8. Purchase and installation of disinfection equipment
9. Purchase and installation of dosing tank pump
10. Purchase and installation of lift station pumps
11. Purchase and installation of lift station guide rail systems
12. Rehabilitation of electrical components
13. Installation of office sewage grinder station
14. Purchase and installation of composite samplers
15. Purchase and installation of emergency generator
16. Purchase of excavation equipment
17. Purchase of sewer inspection camera
18. Fence replacement
19. Purchase of service truck and equipment
20. Addition to existing building or building of new administrative/billing offices

These items have been completed in whole or part (indicated by the letter P) in the period from September 1, 2002 through March 31, 2003:

Item 1 – P
Items 2 – 7
Items 9 – 10
Item 12 – P
Item 20 – P

The new list of items to be completed before December 31, 2004 include:

Completion of Items 1, 12, and 20

- Purchase and installation of disinfection equipment
- Purchase and installation of lift station guide rail systems
- Installation of office sewage grinder station
- Purchase and installation of composite samplers
- Purchase and installation of emergency generator

Village of Laurelville
WWTP Renovation Project
Narrative Statement (Workplan) Updated

- Purchase of excavation equipment
- Purchase of sewer inspection camera
- Fence replacement
- Purchase of service truck and equipment

(5)

Village of Laurelville
WWTP Renovation Project
Narrative Statement (Workplan) Updated

Update to Narrative Statement for the period ending November 30, 2004:

A list of items remaining to be completed:

1. Comminutor rehabilitation (10%) **(List Item 1)**
2. Installation of disinfection equipment (Waiting for PTI from Ohio EPA) **(List Item 8)**
3. Rehabilitation of electrical components (90% complete) **(List Item 12)**
4. Installation of office sewage grinder station **(List Item 13)**
5. Purchase and installation of composite samplers **(List Item 14)**
6. Purchase of excavation equipment **(List Item 16-19)**
7. Purchase of sewer inspection camera **(List Item 16-19)**
8. Addition to existing building or building of new administrative/billing offices **(List Item 20)**

Village of Laurelville
WWTP Renovation Project
Narrative Statement (Workplan) Updated

List Item Number	Work Narrative	Planned Completion Date
1	Restoration of existing comminutor to include: ▪ Replacement of cutter bars and teeth ▪ Replacement of bearings ▪ Replacement of gear assembly ▪ Replacement of drive motor The manufacturer of this piece of equipment has a "swap" policy, whereby the customer returns an old unit the company can refurbish. A refurbished unit is sent to the customer, and the customer is charged the price of refurbishing the old unit. Work will consist of removal of the old unit from the influent chamber, steam cleaning and spraying with a strong chlorine solution for disinfection, packaging and shipping the old unit; reinstallation of refurbished unit, replacement of electrical safety switch with NEMA4 30A 3Ø disconnect switch. Control panel is in good condition.	Summer 2005
2,3,6	**Installation of aerated "Aqua-mat" hanging media filters in filters 1 & 4. Installation of Nitro-soma injection lines in filters 1 & 4 for ammonia-nitrogen reduction. Installation of new distribution piping in filters 1 & 4. Installation of new distribution piping in filters 2 & 3.** Scope of work: Install hanging/floating fiber filters. Install aeration tubing and nitro-soma bacteria injection tubing. Build elevated treated lumber panel to hang mixing/metered injection apparatus. Install 15A 120V 1Ø electrical outlet to power the injector. Install oiless air compressor to feed aeration tubing. Install potable water supply for automated mixing and incubation of bacteria. Install inlet piping from dosing tank feed line across length of filter for disbursement of dosed lagoon effluent. Cut dividing wall (requires concrete boring) to accommodate distribution piping into adjacent intermittent sand filters. Install valves in existing under-drains of filters 1 and 4 to allow filter chambers to fill and contact filter media. The Ohio EPA has approved this process change.	Completed per scope of work; Summer 2003
4	**Add pervious covers to media filters 1 and 4** Outsource material and labor to low bidder meeting criteria.	Completed Summer 2003 Installed covers.
5	**Installation of equipment at the influent channel to introduce metered doses of toxin-free bacteria to assist in sludge digestion and improve the effectiveness of the aerated lagoon biological process.** Build elevated treated lumber panel to hang mixing/metered injection apparatus. Install potable water supply for automated mixing and incubation/aeration of bacteria. Install drip feed into influent chamber for mixing with raw influent sewage	Completed Summer 2003 Installation of materials by Hinde Engineering.

Village of Laurelville
WWTP Renovation Project
Narrative Statement (Workplan) Updated

7	**Replace defective effluent flow meter with new unit** Cut effluent piping between disinfection chamber and receiving stream and install magnetic flow device. Install manhole and cover for access. Install remote reading device	Completed Summer 2003 Contractor installed sonar flow meter and remote reading device
8	**Replacement of existing gas chlorination equipment with an alternative method of disinfection, such as UV.** Outsource - Remove all chlorine and chlorine equipment from the facility. Replace with UV tubes in sufficient quantity to kill all pathogenic bacteria with no residual or harmful byproducts to the receiving stream	Pending Ohio EPA P-T-I Fall 2005 Fall 2003, Materials purchased. Installation and electrical work pending.
9, 10	**Replacement of defective pumps and addition of spare pumps to inventory** Removal of malfunctioning pump in Dosing chamber and Lift Station 1. Electrician to install new duplex control panels to alternate, start, and protect pumps. Install new pumps and test. Lift Station 1 pump to be capable of pumping 285GPM at 75TDH, and is to be rated at no greater than 10HP, 10A, 480V 3Ø, and shall pass a 3" solid without clogging. All pumps shall have moisture probes installed. Dosing Tank pump is to pump 825GMP at 28' TDH. The rated HP should not exceed 15HP, 50A, 480V 3Ø. Flanges for guide rails shall be included to fit discharge piping.	Completed Fall 2003 per scope of project.
11	**Replace deteriorated and obsolete lift station pump guide rails with systems designed for existing/new pumps.** Outsource - will require entry into a 35' deep raw sewage wet well. All hazardous entry safety precautions shall be taken. The scope of this project will be to remove the existing guide rails and foot pads and replace, anchor, and install new guide rails to mate the pumps. Replace all electrical boxes with NEMA 4 junction boxes, and replace Lead, Lag, Off, and Alarm float assemblies with new units. This project will require plugging two gravity main lines bringing raw sewage from the village. The nature of the flow indicates minimum impact to consumers will occur in the post-midnight hours. Every attempt should be made to proceed with the project during those hours, and to restore pumping as quickly as possible	Completed Spring 2004. Contractor installed new guide rails per scope.
12	**Rewire and/or replace external controls, lighting, switching, motors and contacts damaged by hydrogen sulfide vapors and weather** Replace any and all motor control stations, junction boxes, safety switches, receptacles, switches, security lighting, wiring, and circuit breakers to bring the safety and code of all electrical components in compliance with the NEC	90% Completed. Ongoing until all projects completed. Electrical contractor installs/repairs per need. Fall 2005

Village of Laurelville
WWTP Renovation Project
Narrative Statement (Workplan) Updated

13	**Replacement of defective office/lab sewage grinder pump** Remove existing control panel, wiring, tank and piping and replace with new unit (purchased). Requires excavation to remove old unit and place new unit. Requires concrete to be poured around bottom flange to eliminate floating	Spring 2006
14	**Repair or replace existing refrigerated composite samplers at influent chamber and effluent channel** Remove old refrigerated composite samplers. Refrigeration units are non-functional and must be disposed of according to law. Replace with new timed samplers. Capacity is 5 gallons or less and must include an automatic shutoff to prevent overfilling during times plant is not manned	Spring 2006
15	**Replace diesel generator drive engine.** Requires electrician and outsourced generator contractor. Remove wiring from automatic transfer panel. Remove existing generator or diesel engine as needed. Replace and rewire transfer panel. Test. Unit should be capable of producing 50KVA at 480V 3Ø sufficient to operate, simultaneously, all 4 lift station and dosing tank pumps, the comminutor, emergency lighting and heat in the office building, and disinfection equipment	Completed Summer 2004 Electrical contractor installed new diesel power generator plant and transfer switch per scope.
16-19	**Equipment purchases: bid only for:** ▪ **Maintenance truck (Complete) Purchased Fall 2003** ▪ **Safety equipment (80%) Ongoing as needed** ▪ **Tools (80%) Ongoing as needed** ▪ **Inspection camera** ▪ **Backhoe/mini-excavator**	Summer 2006
20	**Administration/Billing offices** Outsource - Construction of structure to house administrative and billing functions, segregated from the existing lab/disinfection/control building. Suggested size is 12 x 24' with one administrative office and one reception/billing area. The building is to be compliant with all applicable state and federal laws pertaining to publicly accessed buildings, including proper handicap accessibility.	Fall 2006